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Digital Innovation as the Key Factor in Changing Organizational Identity into a Digital Organizational Identity

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The purpose of this article is to explore the consequences of digitalization on organizational identity. The first stage of the research was a review of the literature dedicated to Organizational Identity (OI), which allowed us to identify key areas and features of classically understood OI. On this basis, we created the first part of the model, which is presented as OI. Then we conducted a systematic literature review of scientific articles connected with Digital Innovation (DI) in the Scopus database, which we identified as being of particular relevance to organizational studies. The results obtained in relation to the revealed research gap, which is the lack of a holistic approach to the change made in the concept of organizational identity brought about by digitalization, allowed us to develop a model of OI able to capture its transformation as Digital Organizational Identity (DOI).

Keywords: Digital Organizational Identity, Digital Innovation, digital transformation, Organizational Identity.

Innowacja cyfrowa jako kluczowy czynnik przemiany tożsamości organizacyjnej w cyfrową tożsamość organizacyjną

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Celem artykułu jest zbadanie konsekwencji cyfryzacji dla tożsamości organizacyjnej. Pierwszym etapem badań był przegląd literatury poświęconej tożsamości organizacyjnej (OI), który pozwolił zidentyfikować kluczowe obszary i cechy tradycyjnie rozumianej tożsamości organizacyjnej. Na tej podstawie stworzono pierwszą część modelu, która jest prezentowana jako OI. Następnie przeprowadzono przegląd artykułów naukowych związanych z DI (*Digital Innovation*) w bazie danych Scopus. Wyniki uzyskane w związku z ujawnioną luką badawczą, jaką jest brak holistycznego podejścia do zmiany koncepcji tożsamości organizacyjnej spowodowanej digitalizacją, pozwoliły opracować model OI zdolny do uchwycenia jego transformacji w DOI (cyfrowa tożsamość organizacyjna).

Słowa kluczowe: cyfrowa tożsamość organizacyjna, cyfrowa innowacja, transformacja cyfrowa, tożsamość organizacyjna.

JEL: O32, O33, Z10

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1. Introduction

The digital transformation of not only organizations but of almost all areas of our lives radically changes the classically defined concepts in organizational and management science. It introduces completely new terms describing previously unknown phenomena (e.g. Cyber-Physical System, Industry 4.0, artificial intelligence, deep learning, big data, blockchain, e-commerce), and also expands the semantic fields of some terms that in "analog times" were used by organizational science. One such concept is Organizational Identity (OI), whose transformation into Digital Organizational Identity (DOI) we want to study in this article. The "digital cage," which has now replaced the Weberian "iron cage," (Weber 1905/202, DiMaggio, Powell 1983, Baehr 2001), demonstrates the victory of matter over idea, when ideas gain material form, becoming for example a product or a service for sale. This is how Digital Innovation works most often. As we want to demonstrate, it also affects the shifting of classical concepts into new, digital positions, which is obviously associated with sensemaking as a process of constructivist creation.

2. Theoretical Background and Literature Review

In this paper, we conceptualize the transition from Organizational Identity (OI) into Digital Organizational Identity (DOI) by focusing our attention on the shifts that occur in the core organizational axioms (attributes, performance and core processes, strategy, and relations with the external environment). However, the process of constructing the term DOI calls for a more precise theoretical grounding, which we find in the concept of sensemaking (Weick 1979, 1995). We understand the process of sensemaking as an ongoing rationalization of human activity seen in the attempt of giving meaning to a portion of reality, which leads to its translation but can simultaneously be an act of its uncovering and creation. In general, the process of giving meaning ranges from exposing weaknesses of current terms in an explicitly critical manner by using *denaturalizing ontologies* (Whittle, Spicer, 2008) that follow reflexive avenues of discourse. But new terms can also emerge in a more settled manner. The necessity to invent or rethink existing categories, which no longer hold the capacity to define or explain the new situations, may emerge in consensus-driven negotiations (Fink, Dauber 2016). The fundamental question, "Who am I?" asked in the context of organizational identity has resulted in the creation of rich literature on the subject, beginning with the classic text by Albert and Whetten (1985). Because it is not our goal to make one more review of the OI literature, the more so because such studies are already available (He 2013), we focus only on finding the OI attributes that we consider useful in constructing a model that captures the transformation process of core elements of OI into a DOI.

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OI as a form of social identification – both within the organization and in the external perspective (extended organization) – meets the need for belonging and simultaneously makes the organization recognizable by people who do not work in it. On the one hand, we have an approach to organizational identification as a belief in the organization's goals and values, which means the identification of employees with the construct – the identity built around the organization's strategy. On the other hand, the organizational identity is read through the culture, artifacts, behaviors, and narratives that create it. Time plays an important role in the process of how multifaceted organizational dynamics work together to form an identity. Organizational culture is also associated with the role of charismatic leaders, because they are particularly adept at manipulating symbols (Bass, 1985), which prevents the routinization of organizational identity and indicates OI as a kind of game to which employees are invited, or even drawn, unaware that they have been subjected to social engineering techniques. Hofstede writes directly about the programming of minds of an organization's members (Hofstede, 1991), where an organization can be perceived as a form of text. In that case, all types of motivational speeches refer not so much to the facts as to the wishful thinking of leaders and trigger energy so as to be a catalyst for change. OI is the object of faith, and employees are the believers. Language and storytelling play a key role in building OI. The more incomprehensible to the employees the subject of the organization's activity – we mean the level of complexity of products and services, thus their hermeticity, even magic – the easier to build a faith and taboo identity in relation to inconvenient and unexplainable issues. Such identification is also associated with a sense of prestige of participating in something special and groundbreaking, which cannot be experienced outside the organization. As indicated in the work of Albert and Whetten (1985), identity distinctiveness is built by designating and defending organizational boundaries and exclusion. The exchange of symbolic meanings between members of the organization, which is characteristic of symbolic interactionism, creates the sense of participation and strongly affects the internalization of values, beliefs and other features of OI. How an organizational identity can endure is tested in crisis situations and acute intra-organizational conflict, as well as radical change. Especially the latter factor becomes something obvious in times of liquid modernity (Bauman 2000), where what is solid becomes liquid under the pressure of a competitive environment.

Digital innovation represents a topic of great relevance for practice, academia, and policymakers. As a topic of research, digital innovation is creating new investigatory perspectives in the context of emerging theories, for example Management of Digital Innovation (MDI; Nambisan et al., 2017), where digital innovation is treated as sociotechnical phenomenon challenges or where it deeply changes existing conditions and assumptions in organizational scholarship. DI is broadly defined as "the recombination

of digital components in a layered, modular architecture to create new value-in-use to users or potential users of a service" (Lusch, Nambisan 2015; Yoo et al. 2010, p. 302). Innovative thinking appears where organizational culture creates the right climate for creativity. As Glińska-Neweś et al. write, this climate is "a specific combination of elements connected with manners of communication within the organization, positive interpersonal exchange, organizational integration, the employee sense of safety, co-participation and co-operation of the workers, support for creative ideas, openness and trust existent in the organization, the organization's dynamism and attitude to diversity" (Glińska-Neweś et al., 2017, p. 84). DOI is also closely related to public policies, legislation and national digital strategies, although long-term bureaucratic habits and the lack of risk acceptance by government representatives and officials result in creating barriers more often than guidelines for radical change. As Glinka and Hensel write, "the administrators stressed contradictions inherent in the policy of change: While they are encouraged to adopt a more innovative stance, the new laws are increasingly detailed and confining" (Glinka & Hensel, 2017, p. 152).

3. Objectives and the Research Gap

The purpose of our article is to explore the consequences of digitalization on organizational identity. The results obtained in relation to the revealed research gap, which is the lack of a holistic approach to the change made in the concept of organizational identity brought by digitalization, allowed us to develop a model of OI able to capture its transformation into DOI.

4. The Approach and Methods of Analysis

The first stage of the research was a review of the literature dedicated to OI, which allowed us to identify key areas and features of classically understood OI. On this basis, we created the first part of the model of Organizational Identity. Then we conducted a systematic literature review of scientific articles connected with DI in the Scopus database, which we identified as particularly relevant to organizational studies to create the main categories and areas of DOI, as well as modes of understanding the categories of DOI. We obtained the following returns from the Scopus database:

Year	2006	2007	2008	2010	2012	2013	2014	2015	2016	2017	2018
Number of papers	1	1	1	1	3	2	2	3	6	6	5

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The systematic literature review was also designed in stages that included selecting the most comprehensive databases for management studies. The database was explored by applying the query string "digital innovation." Research was limited to articles that were peer reviewed and that treated digital innovation as a central theme (to determine this, we decided to limit the selection of articles to the ones that have "digital innovation" in the title and also in the key words). Next, any article was excluded that was not in English or that was duplicated. In the final stage, the articles were read and coded according to selected axioms that construct organizational identity. The research material that we collected, especially comments from members of different organizations or discussions by authors of research papers, allowed us to use qualitative data analysis. The approach based on constructivism and the concept of sensemaking formed the basis of our research and led to the development of the transformation model from OI into DOI.

5. Main Findings

Our main result is the development of the DOI model presented below.

Main areas of DOI	Main categories of DOI	Mode of understanding the categories of DOI in the research papers
Identityas attribute-based in the context of DI	Digital organizational culture	"Teachers should stop being the sole bearers of knowledge and become learning managers and tutors" (Kryukov, Gorin, 2016, p. 5)
	Value: success, innovation, embracing uncertainty	"The main problem is that we believe in this (digital innovation) though we lack solid arguments!" (Svahn et al., 2017, p. 241)
	Beliefs: immortality through technology – cyborgization	"This is reflected in various iPad commercials where the focus is not on the device, but instead on what you can do with it" (Gershon, 2013, p. 51)
	Taboo: defeat, creative impotence	"What is striking is that the raw essence of human combinative creativity is unchanged"(Sapsed, Tschang, 2014. p. 134)
	A sense of prestige: the sense of participating in something crucial for humanity	"VPPs provide an innovative solution to this problem as they integrate several small, decentralized power-generating units, especially renewable ones" (Dellermann et al. 2017, p. 35)
	Artifacts: new tools, AI, robots, software	"Learning-oriented algorithms are needed that would allow one to build a rich lexica and meta-data related to particular dialog themes" (Brunswicker et al., 2015, p. 57)

Main areas of DOI	Main categories of DOI	Mode of understanding the categories of DOI in the research papers
	Storytelling: a bold vision of the future, close to a science fiction narrative	"In order to understand contemporary change processes, we need to shift focus toward external environments and adopt new perspectives on a world with which we are increasingly intertwined (Svahn et al., 2017, p. 242)
	Materiality of the organization: it is not necessary – can be virtual	"e-business is more than just e-commerce" (Dini et al., 2008, p. 417)
Identity through performance and core processes in the context of DI	Products: based on DI	"Standard shoes have merely physical materiality" (Jahanmir, Cavadas, 2018, p. 338)
	Services: based on DI	"However, the scope of digital content is more broadly extended to the bundle of product and service" (Kim et al., 2012, p. 542)
	Working environment: Cyber-Physical System	"interaction between both, technological and human entities in an ecosystem affect the relationships and influence the dynamics of an innovation ecosystem" (Kolloch, Dellermann, 2018, p. 255)
	Core processes based on DI	"Chief Digital Officers also describe how a typical "digital person" perceives this pace as rather slow and traditional" (Tumbas et al., 2018, p. 196)
	Technology: AI, VR, AR, 3D printing, wearable technology	"The Internet of Things (IoT) paradigm enables interconnection, intercommunication and interaction among supply chain actors" (Bechtsis et. al., 2018, p.60)
	Control as digital surveillance	"One of our big insights [years ago] was that we didn't want to get into any business where we didn't control the primary technology" (Gershon, 2013, p. 52)
Identity as strategic orientation in the context of DI	Mission: making a discovery, making life easier	"The challenge is to show that new services are, without doubt, worth the cost and not merely nice additional features" (Abrel et al., 2016, p. 330)
	Vision: crossing the limits of knowledge and human capabilities	"The first project (using 3-D) was the most successful we may have ever had" (Boland, 2007, p. 638)
	Strategy: globality, scalability, flexibility, swift reaction to opportunities	"Together, these multiple wakes of innovation produce a complex landscape of innovations with unpredictable peaks and valleys" (Abrel et al., 2016, p. 331)

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Main areas of DOI	Main categories of DOI	Mode of understanding the categories of DOI in the research papers
	Goals: strong connection between personal goals and strategic organizational goals	"Features with clear explanations of the game background, means of providing individual and final goals during play and describing the character's conditions" (Castro et al., 20016, p. 169)
	Leadership: charismatic, visionary, with an ability to create a collaborative environment of mutual trust rooted in the leader's knowledge	"We realised that for almost all future consumer electronics, the primary technology is going to be software" (Gershon, 2013, p. 52)
	Change and risk management: change as a permanent factor of the organizational environment, high level of risk acceptability	"Prototypes used as a mean of communicating ideas to users and way of experimenting" (Abrel et al., 2016, p. 331)
	Planning and analysis: planning and analysis using artificial intelligence and big data	"The interaction in digital environments creates a gigantic stream of behavioural data that provides novel research opportunities to move beyond outdated theories" (Brunswicker et al., 2015, p. 53)
Identity as organizations' relations with the external environment in the context of DI	Innovation: innovation as a key business value and ontological feature of the organization	"all project members are invited to meet several times in order to define, even in simple terms, what the value of the innovation is and how we can deliver it to potential customers" (Simmons et al. 2013, p. 749)
	Isomorphism and mimeticism: "the winner takes it all;" standard-setting creates isomorphism and mimeticism	"Again, if I want to compete with the external entrepreneurial start-up incubator ecosystem, I've got to be playing by the same set of rules" (Tumbas et al., 2018, p. 194)
	Exclusion: lack of digital skills	"Creating a positive attitude … will allow companies to sell their technologies faster" (Jahanmir; Cavadas, 2018, p. 342)
	Network: creating a community of followers	"The interaction in the network is motivated by the actor's purposes to employ the innovation and innovation process as a solution to meet their needs" (Makkonen, Komulainen, 2018, p. 4)

6. Discussion

Below, we identify the changes in all of the axioms of identity.

Attribute-based: DOI is created by culture shaped around the pursuit of the unknown, bold breaking of taboos, and crossing boundaries. DOI mobilizes high intellectual capacities and logical thinking to achieve something contrary to a rational goal. Virtual and reality immersion creates new and previously unknown opportunities, but also fears and threats, in a phenomenon well-known from dystopian themes of science fiction. The values that set DOI apart from OI often refer to success and innovation, but also assume a high level of risk acceptance. For example, in such cultures, one can more often find beliefs in immortality through technology – cyborgization – which also translates into the belief in the long life cycle of the organization. DOI artifacts clearly stand out from traditional ones. New tools, AI, robots, and interfaces that allow people and machines to communicate demand a new language and approach in everyday organizational practice.

Performance and core processes: DOI is based on performance and knowledge of many different actors that are interconnected in the ecosystem. Hence, control of the processes becomes fuzzy, so the core processes depend on people and technology working tightly together. In this organizational reality, high performance teams become core through their results, which are the main indicators of success. Business processes and models, such as e-commerce or e-business – unknown in "analog" culture – demand new skills from employees and, more importantly, understanding of new process attributes such as scalability, globality, and the ability to operate with advanced analytical tools that allow searching and analyzing big data. Decision-making processes in such cultures are supported by tools for their modeling and simulation, which obviously increases efficiency, but also brings the consequences of standardization and unification of activities.

Performance and core processes eliminate errors and reduce costs, but they also limit the creative approach to employee tasks, in some cases preventing employees from active reflection. This can be a path to automation and robotization of processes, but also to the burnout of employees who will conduct routine activities for too long and without deviation, because the work has been planned and verified by intelligent simulation tools.

Strategic orientation: constant learning and an attempt to cross the limits of current knowledge require a different approach to strategy, because work in organizations that create digital innovation is based on experiments and trials that impact the level of failure, which is correlated with the level of burnout and demotivation. Moreover, the fact that unexpected groups of actors with different goals might be needed in the process of creating digital innovation needs to be taken into consideration in the planning process. We can identify at least several obvious differences in the approach to the strategy created under DOI. In this case, the mission is strongly associ-

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ated with the hope of radical technological change, which not only affects relationships but also has a strong impact on the quality of life, making life easier. Strategic visions of the future reach for images in which courage is not only a matter of imagination of the authors but also fulfills the real needs of clients. Strategic goals in DOI, due to the high competence of employees, sometimes very difficult to find on the labor market, as well as the long process of implementing a new employee to specific conditions and innovation context, require linking strategic goals of the organization with personal goals. As in any strategic thinking, the question about the role and characteristics of leadership arises. We characterize her or him as a person possessing the ability of creating a collaborative environment of mutual trust rooted in leader's knowledge. Such leadership is also associated with a high level of risk acceptability. Strategy evaluation, management review, and resulting corrective actions are supported by AI.

Relations with the external environment: the concept of external/internal environment diffuses, because a distributed innovation agency is based on heterogeneous entities that create complex relationships. For example, the use of social media and knowledge sharing digital platforms impacts organizations' identity and sensemaking processes to the point that DOI becomes a collective effort. The role of a customer is important here. Customers become users that can modify the product and act as designers working for the organization. Their insights can also trigger new ways of innovation, making the process of DOI strongly rooted in social construction, as understood by Berger and Luckman (1967). DOI is also built on cooperation with the environment, looking for opportunities arising from the environment, building cooperation networks and coopetition. As Czakon, Klimas, and Mariani notice: "Engaging in coopetition involves a broader perception of actors surrounding the firm, including: suppliers, customers, complementors, and competitors. Furthermore, all involved actors can win if they both collaborate to generate more value and compete for a share in the increased "business pie," rather than competing for available value in a competitive win-lose setting" (Czakon et al, 2019, p. 4). The need for language and tools that make relationships with specialists from different industries and from different locations possible is also something that makes DOI unique as a high degree of interdisciplinary work and teams becomes the norm. The complicated nature of relationships affecting DOI and simultaneously inspired by DOI, is grounded in the ease of implementation and duplication of standards, which contributes to organizational isomorphism and mimeticism. A statement known in digital business, "the winner takes it all," justifies the ensuing proven patterns. Therefore, DOI has the property of multiplying the network of relationships by using a comprehensible intercultural code for a community of followers, leading to the exclusion of those who do not have digital skills and are not able to decode the subtle meanings contained in DOI.

The scale and magnitude of changes in OI, as we discussed above, allows us to conceptualize the identity development model, in which OI is transformed into DOI. The model strongly relies on the classical approach to OI seen in the selected categories. However, the main point is that in the DOI model all these categories are filled with a different meaning brought by material and non-material elements and the relationships they create. Our main goal was to emphasize the dynamic nature of that process, in which OI is transformed into DOI, bringing to life a new social (digital) construct.

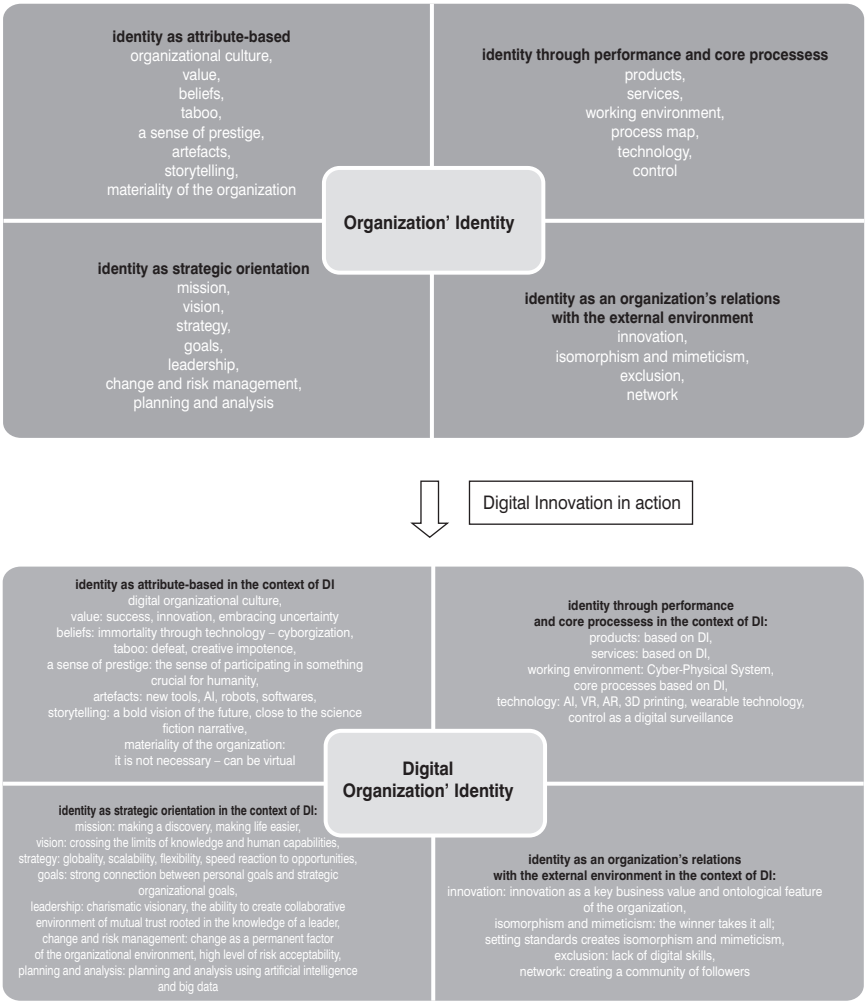

Fig. 1. Model of shifting OI into DOI.

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7. Summary

The consequences of digitalization, understood as a complex transgressive process of identity change, have an impact on a range of stakeholders. In this paper, we wanted to focus our efforts on understanding some of the dynamics within this process and also call for the analysis of its outcomes for key stakeholders, among them business organizations. For the latter, digitalization is a time of multiplying narratives that derive from very different sources. These sources can generally be associated with the traditional, analog way of acting, while the sources are future-based digital undertakings. These sources are not yet fully discovered; they are unknown and futuristic. In that sense, DOI is established by the force of identity recreation on the edge of the analog and the digital as well as the individual and the collective. This is a very volatile process characterized by high risks, experimentation, collegial effort and a high degree of investment. In this process, DOI acts as a catalyst that gives new meanings and direction, in which different narratives tightly merge. DOI is fueled by digital innovation, which is strongly connected to government policies and regulations. On the one hand, the governments can stimulate digital innovation by providing financial and non-financial support but, on the other hand, they need to be concerned about issues connected to sustainability and the ethical consequences of digitalization. On a macro level, mature DOIs impact the economic position of a country. This phenomenon is traditionally associated with the Silicon Valley and currently also with China and Asia in general. Moreover, the consequence of DOI on researchers should be considered and it is important here to consider data mining, which seeks to identify new correlations and patterns. Therefore, researchers need different sets of skills that will allow them to make sense of digital traces. More broadly, DOI may change the type of questions relevant in the field and the ways of exploring them. Constructing DOI requires making significant changes across multiple layers of an organization. We see the orchestration of these changes, as opposed to linear change management, as the important challenge for management researchers.

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